On Cold

In the consideration of chemists cold is but the absence of heat. As heat decreases cold ~~increases~~ increases. Throughout the following pages, in conformity to the established usage of language, the term is used in an active sense. The effects of cold upon inanimate matter are excluded from this treatise.

A full enquiry into the operation of cold upon the constitutions of animals is a task, which I am unable to accomplish. The undertaking is one, which, under the pursuit of an able investigator, might enrich physicians with new, and efficacious means of combating disease, and the great mass of citizens, with prudent measures to obstruct the inroad of many diseases, which afflict them. Cold prevents the evolution of our frame to its proper stature, and bulk. A temperate part of Asia is

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said to have been the native land of our first ancestors, Adam, and Eve; their posterity gradually spread themselves, until they peopled every quarter of the globe. With the admission of this doctrine, and the resemblance of parent and child, in the same country, as truths, we must acknowledge, that the varieties in mankind have been stamped by other causes than generation, and among these climate is most conspicuous. Cold exerts its unfriendly influence upon vegetables, as well as animals. The third grand division of nature, or the mineral kingdom, is out of the question. Being without life, they increase by laws which are not dependent on life. Leaving this part of the subject, with these general remarks, the effects of cold, as connected with physiology, will be briefly considered. The term, physiology is here used in its common signification, a description of the functions of the human body.

To Secretion

Menstruation is arranged under this head. At

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puberty begins an aptitude to productive intercourse between the sexes. Menstruation is necessary to prepare the female for conception. In cold latitudes this function is delayed until the twentieth year; whereas, in warm climates, even pregnancy has occurred at the ninth year, according to the records of travellers. In the male, the venereal appetite appears late in cold countries; it is also stronger in summer, than in winter. At the return of spring, the venereal orgasm is felt by a great part of animal nature. The late puberty of the ancient Germans, which Caesar ascribes to hunting, may have been owing, in part, to the coldness of the climate. A view of nations, in cold, and warm latitudes, strengthens the probability of the above observations. Those parts of North America, situated beyond the Canadas, are inhabited by a people (the Esquimaux, and others) thinly dispersed, and few in number: Russia in Asia, which exceeds in extent European Russia, contains but four millions of inhabitants. The manners, and customs,

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food, and clothing of civilized society, render the body almost inaccessible to the influence of cold; hence the European Russians, Swedes, and Norwegians differ but little from the people of more temperate climes.

The southern countries of Europe, and Asia swarm with people; and, even in the sixteenth century Cortez & Pizarro found a numerous population in Mexico and Peru. If some of these countries are, at the present time, less populous than in former ages, my proposition is not disproved by the fact. This contrast of numbers, in cold and hot countries, may be explained by reference to a difference of climate. While in warm climates, the multiplication of our species is premature, and rapid, cold countries, which have not been blessed with civilization, are almost destitute of inhabitants.

To the head, secretion, belong perspiration, and the function of the kidneys. The skin, and kidneys, have the power of doing double duty, without being diseased. When the perspiration is checked by cold,

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such is the natural connection between the skin, and kidneys, that the latter become the outlet to the perspirable matter. In summer urine is scanty, and perspiration profuse; the reverse is the case in winter. That cold lessens the discharge by the skin, is admitted by all. Its palness and rigidity, the facility of accounting for our sensation of cold from the low temperature of the air, and the greater frequency of inflammation in negroes, than in white people, tend to establish its truth.

To prove that cold lessens the secretion of bile; let us advert to the following truths, bilious diseases do not prevail in winter, and cold countries, but belong to summer, and autumn, and increase in malignity as we approach the torrid zone.

To Digestion

To aid digestion, a degree of cold agreeable to sensation is very advantageous; this is proved by the keen appetite, and vigorous digestion of those, who do not expose themselves to an

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extreme degree of cold in winter; they become more fleshy, and enjoy greater alacrity of body, and mind. When summer returns, the body is reduced, and its vigor impaired. Every one, who has felt the refreshment, and comfort consequent to cool bathing in summer, knows its utility. The cold bath often preserves the health of our citizens, and, under the prescription of the judicious physician, frequently restores it. These effects are produced, in a great degree, by its operating on the digestive organs. That in health the internal use of cold, in any shape, is useful, I am not prepared to deny. It is often hurtful in the various combinations, in which it is received into the stomach. Before meals, a draught of cold water blunts the appetite. In summer, cold water is drunk to quench thirst, lessen the heat of the body, and check perspiration; it increases, with few exceptions, the perspiration at this season of the year. It is true that some fluid is necessary to supply the waste by the skin: even for this purpose, cold water may be superseded by drinks, which, if cool, are required in less quantity, because they moderate the cutaneous discharge, by increasing others, or by some mysterious agency.

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To Absorption

This function of our economy is assisted by cold. Through the sympathetic agency of cold upon the lacteal vessels, a moderate degree of it is so useful in digestion. Some dropsies are partly cured by the cold bath. Cold applications are used to discuss certain tumours, and effect the absorption of extravasated blood, and lymph. Scrophula is cured by sea bathing. It is remarkable that this disease breaks out at the approach of warm weather. When cold is so long applied as to weaken the blood vessels, absorption in the interior parts of the body may be unimpaired. When cold is thus applied, the superficies of the body is almost paralysed, and the lacteals, which sympathize, will suffer. The influence of cold does not reach the absorbent, so soon as the sanguiferous vessels, the lymphatic system being so constituted, that an effect imposed upon any one part is not felt throughout the whole; though the superficial absorbents, and the lacteals, by sympathy, may suffer, those, which ramify in every recess of the body, may continue active. On the contrary, the heartes

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the great first cause of the circulation of blood, and is to the arterial, what the sensorium is to the nervous system. It is also a sensible organ, possessing a wide sympathy in our body, rendering it liable to be affected by slight causes; when it beats high, every artery cooperates, and when its motion is feeble, that of the arteries is, likewise. Those absorbents, which are not injured by cold, incessantly waste our body; and its replenishment is not proportionate to the loss, because the office of the lacteals is suspended by cold, and, the deposition of new matter is less, in consequence of the feeble circulation. If the above observations be true, we can account for the emaciation of those, who use the cold bath to excess. Dr Huxham observes "that most who use the cold bath grow somewhat leaner, though more vigorous, and active A gentleman of thin habit, vivacity of spirit, and much exercise, used cold bathing, in the sea, very frequently; he lost much flesh and spirits. He used a sufficient quantity of food" It is obvious that the good, and bad effects of cold, proceed from a difference in its degree

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On the effects of cold on the nervous system much might be said. It excites to action the nervous power, and by its continuance, it is exhausted, or made quiescent. When ~~the body~~ death approaches, the body feels not the cold. Cold ends its fatal operation, by putting a stop to the circulation

Of the effects of cold on the sanguiferous system, I cannot speak with accuracy. Observations, and experiments are wanting. Reason here is a fallacious guide.

Because fractures are more frequent in cold, than in warm weather, an opinion has prevailed, that cold increases the fragility of bones. The bones, while the power of locomotion continues, experience no change of temperature. Dr Physic has offered a more plausible explanation, viz. inordinate muscular action to guard against falling.

To muscular contraction, a moderate degree of cold gives mobility, and vigor.

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Knit into force, and the same Roman arm,
That rose victorious o'er the conquered earth,
First learned, while tender, to subdue the wave.

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Cold seems to give quickness, and energy to muscular motion, in two ways. 1st By its influence upon the ~~living solid~~, ~~or~~ nervous system, and 2d. By increasing the irritability of the ~~simple solid, or~~ muscular fibre.

Muscular action is known to be invigorated by gentle pressure. It may, at first view, appear, that cold gives this pressure by condensing the atmosphere; but there are some facts, which have a tendency to controvert this notion. The ascent of vapour, and precipitation of rain, hail & snow, the eternal snows of the Alps and Andes, together with thermometrical observations, prove that the higher regions of the air are colder than that, in which we move; but that their density is less, the ascent of balloons, vapour and smoke, only to a certain height proves. Balloons vapour, and smoke would not cease to rise, unless they had reached a stratum of air not exceeding themselves in specific gravity. The mercury of a barometer falls, as we ascend mountains. Saussure was nearly disabled from his ascent to the summit

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of Mont Blanc, and thrown into a fever, by reason of the rarity of the atmosphere. Humboldt, on the Andes, had hemorrhage from his nose & ears. In consequence of the rarity of the upper strata of air. vapour floats in sight, and by their coldness philosophy teaches us, it is remitted to our globe.

The second division of my subject comprises some remarks, on cold, in a pathological view.

Cold is said to destroy more of the human race, than the sword. It is not consistent with the order of creation, that cold, or heat, should be perpetual. The Creator has provided against a sudden change, by ordaining, that the transition shall be gradual, from the intense heat of the summer, to the intense cold of the winter solstice. He has left to man the task of fortifying himself against the calamitous effects of the changes, which daily occur; the advancement, and simplification of science may enable him to finish it in a distant age.

The prevalent opinion, concerning the modus operandi of cold, is, that of Brown, or Darwin. viz that it accumulates the excitability, or sensorial power, by withdrawing the stimulus of heat; it thus predisposes the body to discased excitement, when heat is reapplied. This doctrine is not of universal application. When women expose themselves to cold, while menstruating, disease is too suddenly produced. to be thus accounted for; when perspiration is checked by cold, disease often follows instantaneously; the disease is often in a part, remote from that which has been cooled.

When the whole body is in the perfect performance of its actions, a suppression of the discharge by the skin is followed by an increase in the quantity of urine; but when any part is susceptible of disease, its production will be the consequence. Cold is oftener combined with moisture, than alone, when it is very destructive, or it is from the concomitancy of coolness with moisture that it is so highly prejudicial. Is not this exemplified in the account Sir John Pringle has given of

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of the diseases, which thinned the ranks of the British army in Flanders, and Germany. This may be enthusiasm? In the bowels, diarrhea, dysentery, cholera, and colic occur; in the muscles, rheumatism, and tetanus; in the sanguiferous system, inflammation, and fever. When an epidemic disease rages, cold facilitates its attack. Hoping to be excused for my brevity on the foregoing part of this division of my subject, the diseases produced by drinking cold water, and by immersion in it, will be treated of at some length.

Through the ignorance, and impatience of people, sudden death is often the consequence of drinking cold liquids, most frequently, cold water; fatigued, and suffering with thirst, the unfortunate victims have drunk in haste, and without moderation; the draught was suddenly fatal.

It is the duty of those, who preside over the health of our citizens, to investigate the cause of this calamity, and lay down precautions, which, if attended to, may prevent it. Two have embarked in this work of the-

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manity, Dr Rush, and Dr Currie; to the disappointment of the people their doctrines are contradictory, and the choice is left to themselves. The circumstances of this casualty have not been carefully observed, nor dissection practised to ascertain the condition of the body, that light might be shed upon its nature. Dr Currie has collected from ancient history numerous facts to confirm his opinion; but these are recorded by historians, and, not physicians. Where facts are not circumstantially detailed they give to our reasoning an obliquity, which will forever mislead us in our search for truth: nevertheless with the materials, in my possession, I shall venture to support another opinion.

The disease is thus described by Dr Rush "In a few minutes after the patient has swallowed the water, he is affected by a dimness of sight; he staggers in attempting to walk, and unless supported falls to the ground; he breathes with difficulty; a rattling is heard in his throat; his nostrils and cheeks expand and contract in every act of respiration; his face ap-

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pears suffused with blood, and of a livid colour; his extremities become cold, and his pulse imperceptible; and unless relief be speedily obtained, the disease terminates in death in four or five minutes."

"This description includes only the less common cases of the effects of drinking a large quantity of cold water, when the body is preternaturally heated. More frequently the patients are seized with acute spasms in the heart and stomach. These spasms are so painful as to produce syncope, and even asphyxia. They are sometimes of the tonic, but more frequently of the clonic kind. In the intervals of the spasms the patient appears to be perfectly well. The intervals between each spasm become longer or shorter according as the disease tends to life or death" — "Three circumstances generally ~~combine~~ concur to produce disease or death from drinking cold water. 1st. The patient is extremely warm — 2. The water is extremely cold. And, 3. A large quantity of it is suddenly taken into the body. The danger from drinking cold water is always in proportion

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to the degrees of combination which occur in the three circumstances that have been mentioned" Dr Currie insists that the more the body is heated the less is the danger; he condemns the advice of Dr Rush to those, who will drink. It will not be deemed presumptuous, I hope, to object to Dr Currie's opinions He avers that the deaths, produced by drinking cold water, are the result of the loss of heat. Immersion also produces death, he supposes, by depriving the body of heat. He asserts that more heat is lost by perspiration, and evaporation, than by immersion. It follows from these premises that these unfortunate beings should have expired before they plunged into the water, since they were surrounded by an element, which conducted away more heat, than that, into which they passed. These propositions are brought together to shew the inconsistency of his treatise; I shall not dispute that more heat is lost in the bath, than out of it.

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When we pass from a high to a low temperature, our sensation, at first, gives us information of the change, and the degree of it. When we lose heat by the evaporation of sweat, we are sensible of it, in proportion to the loss. Those persons, who die from drinking cold water, are heated & perspiring profusely; but there is no perception of cold from the conversion of sweat into vapour; can the body then sustain any loss of heat by the skin. These deaths occur, when the atmosphere is still & sultry, when the evaporation cannot be great. In such weather the sweat trickles from every part of the body. When our sweat is vapoured we have a pleasant sensation of coolness, and have no desire to swallow draughts of cold water. The evaporation is of that kind, by which the water of our globe is translated, and collected in clouds – it is slow, and not perceptible, unless the air is agitated: the sweat is not suddenly dispelled in vapour by a boiling heat. The loss of heat is so slow in a hot, and sultry day, that it is replaced by the sun, and we have no sensation of cold.

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Dr Cullen converted water into ice by vaporation. Dr Black explained the miracle, and extended his doctrines to the elucidation of many great phenomina. Dr Franklin taught that the dissipation of sweat kept the heat of the body uniform. Dr Fordyce & Sir George Blagden have proved by experiments on themselves, that the heat of the body is unchanged in air heated to 260 degrees. We conclude then, that an increase of temperature in the atmosphere does neither raise, nor lower the heat of the human body. When water is drunk, in summer, it is the only power that cools the body; and if the deprivation of heat is the cause of death, the quantity of water, which those drink, who are destroyed by it, should at all times prove fatal. By Dr Currie's experiments, the heat of the body was sometimes reduced to 83 degrees. Can a pint of water absorb in a minute as much as this man lost without the consequence of death?

After rejecting Dr Currie's account of the operation of cold water in producing death, I shall avail myself of some facts, contained in his work, to support another opinion.

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A draught of cold water is fatal, because, from the exhausted state of the system, it is incapable of reaction. I use the word, reaction, as expressive of a fact, without any allusion to the doctrines of life. When the strength of the body is not greatly spent, or the draught not copious or very cold, I conjecture spasm is the consequence; but, when a large quantity of cold water is received into a body, from exhaustion almost incapable of action, it sinks irrecoverably in death.

"Blasius, senensis, familiaris noster, et condiscipulus, dum longiusculo tempore sub ardentissimo sole pilae lusu incalluisset, nec sudore adhuc aut fatigatione remissis, in subterraneum locum, ubi vinaria erat cellula, descendisset frigidissimi vini calicem hausit, quo sopto, statim defuit."

"Elegans et optimae staturae juvenis Romanus, cum pila luderit, et sudore respersus, ac totus madidus, et fatigatus ad putem, pro ith arenda venisset, exhausta frigida aqua per caldarium extracta, illico in terram cecidit, et obiit."

"In Quintus Curtius, an account is given of the march of Alexander the Great, in pursuit of Bessus, through

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the country of the Sogdiani, which is represented as destitute of water, sterile, and covered with scorching sands. The intolerable heat, fatigue, and thirst of the soldiers, in their march through this burning desert, are described with all the florid eloquence of the historian. At length, fainting under their toils, they reached the banks of the river Oxus, where by indulging large draughts of the stream, Alexander lost a greater number of his troops than in any of his battles. Sed qui intemperantius haurerant interclusere spiritu, extincti sunt; multoque major hominum numerus ~~numerus~~ fuit, quam illo amiserat praelio" The desert referred to was upwards of 46 English miles across; they began their journey in the night, and reached the Oxus towards evening.

In America death from drinking cold water is a frequent occurrence in harvest and mowing time; most frequently (to use the labourers phrase) after running a race. The persons, who die in this way, are perspiring freely. Dr Currie thinks that this cooling process, together with the water drunk, is the cause of death,

but thousands, who drink as much cold water, are unhurt by it, though they perspire as profusely. It is evident that they were greatly fatigued, and it is only those, who are exhausted by labour, that expire. I have endeavoured to show, that the heat of the human body varies but little in summer and winter, in heat, and cold.

Dr Rush says "I know but one certain remedy for this disease, and that is liquid laudanum." Life is so stunned by the impression from cold water, that to measure the quantity of medicine to the excitability, we give small, and frequent doses of laudanum.

When the external application of cold water produces death, it is made upon bodies in an exhausted condition— they are unable to react. The impression made upon the skin by cold water is not more forcible than that made upon the stomach by drinking it, because it is a less delicate part of our frame. Against Dr Currie's explanation I offer the uniformity of our heat, and the rare occurrence of death from this cause.

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Alexander, after a very difficult, and fatiguing march, stripped, and plunged into the Cydnus for the purpose of refreshment. What befel him is thus described by Quintus Curtius "Vosque ingressi subito horrore artus rigere coeperunt; pallor inde suffusus est, et totum propemodum corpus vitalis calor reliquit. Expiranti similem ministri manu excipiunt, nec satis compotem mentis in tabernaculum deferunt. He had marched in haste to secure the pass in Mount Taurus by which Cilicia was to be entered; he thence continued his march to the city of Tarsus. Overcome with fatigue, he sought refreshment in the waters of Cydnus. It is probable that the activity of his ruling passions was suspended, that he might the more partake of the benefit, and luxury of bathing. His body was necessarily more exposed to the evil consequences of immersion in cold water. The strong exciting passions, ambition and hope, held the empire of his soul: it was not his nature to enjoy happiness, and health, but during their gratification. When the world was his dominion, he sat down, and wept in grief and despair.

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What a loss then to excitement were the passions, which caused his happiness, and infused vigour into his constitution.

The following is an extract from Dr Franklin's essay on swimming "During the great heats of summer, there is no danger in bathing, however warm we may be, in rivers, which have been thoroughly warmed by the sun. But to throw ourselves into cold spring water, when the body has been heated by exercise in the sun, is an imprudence, which may prove fatal. I once knew an instance of four young men, who, having worked at harvest in the heat of the day, with a view of refreshing themselves plunged into a spring of cold water; two died on the spot, a third the next morning, and the fourth recovered with great difficulty"

The exercises of the Roman youth in running and swimming were never the cause of inconvenience. 1st. Because they were not fatigued by exertion: it is probable the length of the course would not allow of fatigue since it was an amusement, and swimming terminated the contention. 2nd. Because the tumultuous action

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given to the heart and arteries by running would not subside before the sudden impression from immersion had vanished. 3.dly They were accustomed to them.

The safety of going from the hot to the cold bath; and from the hot bath to wallowing in the snow (a Russian practice) is accounted for, when we consider that not even exercise was used previously.

The experiments of Dr Fordyce, Sir George Blagden, and the gentlemen at Liverpool were undergone without injury because they were in the full enjoyment of health, and vigor; they also passed from heated rooms to cold air, which is a much slower conductor of heat than water — the impression was necessarily weaker. On these experiments Dr Currie remarks "Had they continued exposed naked to the cold air till the heat sunk as low as its natural standard, their situation would have been very hazardous. Their heat was two degrees above the natural standard. Why should the sufferings of these men transcend those of the person, whom Dr Currie plunged into a bath 36 degrees below the temperature of the human body,

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and afterwards exposed for several minutes to a cold northeast wind. I will not deny that cold is hurtful, by reason of its depriving the body of heat; but, when cold is thus suddenly fatal, its injurious effects must proceed from its agency upon the nervous system; and from this truth we may deduce the impropriety of the supposition, that the salt of water counteracts the debilitating effects of its coldness on the body. Water, in which salts are dissolved ~~are~~ is a better conductor of heat than pure water; it follows that the stimulus from its application would be more energetic. It will likewise receive additional stimulating power from its impregnation.

I have only to add, that if my opinion be well-founded, it will follow, that the greater the heat, the greater is the danger, when cold water is applied. The precautions inculcated by Dr Rush will be recommended by reason, as well as sanctioned by experience. The partial application of cold, in some degree, reviving the fainting body, and warning the person of the impression, which is to follow. Both mind & body are prepared to meet the shock

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The third, and last division of my subject will be the application to the cure of diseases, or its relation to

Therapeutics

Cold, which, by reason of our ignorance, is so destructive to life, is already in the hands of physicians a powerful remedy. We are prone to find in the works of creation a tendency to destroy our happiness: it is not surprising when we reflect, that the human understanding is unequal to the comprehension of the whole economy of Providence "'Tis but a part we see, and not the whole".

The further human genius has penetrated into the stupendous scheme of the universe, the deeper is the conviction that all is harmony, and adapted to work out general good. The elements, which are fountains of good, and the instruments of beneficence in the hands of Providence, are often the causes of disease, and death. This apparent error in the world may be rendered harmless by the achievements of our intellects, and industry.

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and lay waste the fruits of his industry, may be so applied as to promote his happiness, and cure his diseases. Through design, or accident cold has in all ages been a remedy for disease; but it is only in recent times, its application has been regulated by certain maxims. I cannot trace the history of cold as a remedy from the remotest to the present times, because unacquainted with the writings even of the most celebrated men of antiquity. Having neglected to choose a subject for a dissertation at an early period of my studies; a few notes, Dr Currie's reports, and such facts as reflection shall furnish are the materials, with which I have undertaken the work.

I shall suppose that cold cures oftenest by the impression it produces. I believe this to be its modus operandi, because the experience of every one tells him that it is a stimulus to the nervous system; because the affusion is more efficacious than sponging: by this latter means the heat can be as much lowered, as by the former, but the impression is not so strong, and universal; and because it often recals to active life

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persons, whose heat is below the healthy standard. When I ascribe stimulation to cold, I do not mean it is a positive effect. I will not deny that cold is beneficial, on account of its reducing heat. Affusion makes impression as well by the impulse, and quantity, as by the coldness of the water. Sponging can only lessen heat, and soothe sensation. Immersion differs from sponging in the continued withdrawal of heat, and the permanency of impression. Where the body is plunged into water, immersion acts in the same mode with affusion, but is probably more powerful. The prostration of strength in typhus fever will often preclude the employment of immersion.

"Water is tepid, when warm, but not hot to the sensations; and is in the way of affusion from 87 to 97 degrees of Farenheit's scale." Cool water is next in power to cold. Tepid water acts chiefly by abstracting heat; it does this by evaporation, and relaxing the structure of the skin. The sudden impression upon sensation, which it produces, is not so great as that from cold water used in the same mode.

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In Typhus fever cold water may be used, agreeably to the experience of Dr Currie, "When there is no sense of chilliness present, when the heat of the surface is steadily above what is natural, and, when there is no general, or profuse sensible perspiration. These rules have grown out of his theory, but experience has established their utility in the diseases, to which they have been applied. (If they have arisen from erroneous notions, they cannot invariably be the source of correct practice.) Experience teaches, that perspiration should not be checked in fevers of high action. In Typhus fever it seldom occurs; Dr Sydenham, Jackson & Currie have observed, that a moisture on the skin is a favourable sign in this disease, and Dr Rush remarks, that a profuse perspiration indicates the approach of death. We can readily suppose the cold bath can do no good in this stage of the disease, and might be mortal in so exhausted a state of the body. When the heat is steadily above the natural standard, there is strength enough in the constitution to react under the impression from cold water: this is therefore requisite before the use

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of this powerful remedy. When in Typhus fever the heat is below the natural degree, the strength is greatly exhausted; life has forsaken the surface, and, only lingers in the centre; the body in this condition cannot be benefitted by the use of cold water — it may be injured by the loss of heat, which is yet a feeble stimulus to life.

It may be said, the debility in Typhus fever is greater than that of the labourer, who dies from drinking, or immersing himself in, cold water; but in the former such is the affection of the nervous system, that it is insensible to the stimulus of wine, brandy, camphor, opium, volatile alkali, musk, and Cayenne pepper: that shock from cold water, which would overpower the life of the man weakened by exertion, would faintly be felt by a person in Typhus fever.

The instances are numerous, where patients in the delirium of fever have plunged into the sea or rivers, and come out cured, or much benefitted. Dr Lind, treating of a fever, which attacked the whites of the English settlement in Guinea, says "It approached nearest to what is called a

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nervous fever, as the pulse was always low, and the brain and nerves principally affected. It began sometimes with a vomiting, but oftener with a delirium. Its attack was commonly in the night, and the patients being then delirious were apt to run in the open air. I observed them frequently to recover their senses by means of the heavy rains, which at that time fell upon their naked bodies" In typhus fever ice, cold water, or vinegar & water are applied to the head to calm the delirium The topical application of cold in diseased brain from other causes is recurred to. In the fever of Jamaica Jackson compelled his patients to sit with their feet in warm water, while the cold affusion was made upon their heads, ~~and~~ and removed the delirium. In mania Dr Rush applied cold water to the head, whilst the feet were in the warm bath. Shaving the head is recommended in mania; and the clay cap was once in vogue. The internal use of cold water should be resorted to under the same restrictions, which are prescribed for its external application." When there is no sense of

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chillness present, when the heat of the surface is steadily above what is natural, and, when there is no general or profuse sensible perspiration."

In inflammatory fever I am ignorant whether the general application of cold water has been recommended by any writer. The remedies are evacuations, and among these always diaphoresis. The fevers of the Indians are thus treated by themselves "The patient is confined in a close tent or wigwam over a hole in the earth, in which a red hot stone is placed; a quantity of water is thrown upon the stone, which instantly involves the patient in a cloud of vapour; in this situation he rushes out, and plunges himself into a river, from whence he retires to his bed. If the remedy has been used with success, he rises from his bed in four and twenty hours, perfectly recovered from his indisposition" Dr Rush (from whose work this account is taken) says "involved in a cloud of vapour & perspiration. I have omitted the word perspiration, because I think it could not be so instaneously pro-

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duced; and, it should be a certain truth to shake one of the rules which Dr Currie has furnished for the use of cold water "When there is no general or profuse sensible perspiration." This practice of the American Indians is followed in Finland, and Russia, where fever is probably inflammatory. Dr Franklin, when a young man, was attacked by a fever; and, having read of the utility of cold drink in producing sweating, he adopted the practice, which was successful, and restored him to health. It is reasonable that in every instance of inflammatory fever cold drink might be allowed under the restrictions given by Dr Currie It would be safest however to give it in small, and frequent draughts; by watching its effects, we might determine whether to continue, or cut short its use. As soon as the pores of the skin are opened, warm drink should be substituted.

Bilious fever, which in some forms commits such ravages on human life, and puts a stop to commercial intercourse, has been met by cold water as a remedy.

It has been most successfully used by Dr Jackson in the fevers of the Island of Jamaica. Its inefficacy can only be the reason, for which it has not been generally adopted. Physicians would never abandon a remedy of such easy access, and application, and betake themselves to the lancet, purgatives, mercury, bark, wine &c. unless they had met with disappointment.

In intermittent fever Dr Currie used the cold bath which prevented the attack of one paroxysm; the affusion was used two hours before the expected accession. The next paroxysm was unusually violent, and in the hot stage the affusion was made; the symptoms abated, and the patient fell into a profound sleep. "He afterwards continued the bark as before, and from this time forward was free of disease" It appears that the affusion was but an auxiliary to the more powerful remedy bark. When a better remedy is declared to the world, it supplants that, which before was preeminent, when the prejudices of partizans have died away. Bloodletting, or internal evacuations,

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followed by bark, arsenic, and other tonic medicines, together with blisters, are still the remedies for this disease. Dr Hunham found the flesh-brush, and cold bathing of very great use in preventing relapses of intermittent fever. Dr Cleghorn in his treatise on tertian fevers remarks "It is a noted question among physicians, whether during the fit the drink should be warm or cold. The Spaniards generally give crude water cold from the cistern, and we find by experience that this, if it be not hastily swallowed down in great quantities, is not only safe and innocent in summer fevers, but much preferable to warmer liquors, as it quenches thirst more effectually:—" and therefore they are greatly to be blamed, who refuse their patients so powerful, and agreeable a remedy, in spite of the earnest call of nature, contrary to the advice of the best practitioners".

In the bilious remittent fever, and yellow fever of the West Indies Dr Jackson speaks in exalted terms of the efficacy of of cold bathing

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alone; or alternated with warm bathing. It was often preceded by evacuations. In the Yellow fever of Philadelphia Dr Rush tried it, and deserted it. Dr Stevens, who introduced it, also had recourse to other remedies. Dr Rush found cool air beneficial; he attended a physician of the city, and, when he entered the room judged it necessary to bleed; the window was hoisted, and the patient fanned by a breeze; which had such an effect on the pulse, that bleeding was omitted. The effect of cold air upon the system is a curious inquiry. In fevers of high action it sometimes lessens the frequency and force of the pulse, while in typhus fever it lessens the frequency, and gives force to the pulse; at least this is the effect of cold water. Baron Humboldt relates, that in his voyage to South America a sailor in typhus fever was carried from a warm unventilated room below to an airy place on deck, where he was expected to die: from the time of his removal he grew better until he was perfectly restored to health

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Inflammation may be divided for convenience into superficial, and deep-seated. In the former kind, as Ophthalmia, Erysipelas, and Phlegmon cold is generally injurious. In Ophthalmia surgeons obey the advice of Dr Darwin to withhold cold applications, until the inflammation is moderated by evacuations. The advice of the same author is, that cold applications to Erysipelatous inflammation should be preceded by evacuations. Dr Physic has taught us that the cold should only be agreeable to the patient's feelings. In Phlegmon it is desirable in most instances to procure suppuration, and discutient measures are omitted. In Burns, and Scalds ice has been used with advantage. I will beg leave to remark, that the indiscriminate use of the remedies for burns is injudicious. The circumstance of these accidents, which requires most to be mitigated is the pain. Where the burn is of narrow extent, the system generally does not sympathize; and we may without choice apply a remedy; but where burns are extensive, an additional indication

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claims our attention. The patients strength sinks beneath the accident, and must be supported. In such a case Olive oil would be innocent to the patient, and his complaint, and ice inevitably fatal. We should therefore select those articles, which, while they mitigate pain, maintain the actions of life; and of these Mr Kentish's ointment is best; brandy. vinegar soap, poppies similar virtues.

Dr Cowie remarks "I have only to add that the application of cold under any form, where fever is combined with local inflammation, is a subject of much difficulty, and my observations upon it must wait for the elucidations of future experience"

The affusion of cold water in deep-seated inflammation would repel the blood to the centre, and cause an irremediable congestion in the inflamed vessels. It was used however by Dr Jackson in yellow fever, which dissection has shown to be accompanied with inflammation of the stomach and intestines

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In Hemorrhagy cold is a chief remedy. For Epistaxis or bleeding from the nose, cold water, ice, or cold bodies are applied to the back of of the neck, and scrotum or pudenda

In Hemoptysis, or spitting of blood, the breast, and armpits are the parts, to which cold is externally applied. Dr Darwin has recommended to envelope the patient in a sheet wet with cold water.

In Uterine hemorrhagy cold is applied to the pudenda, and to the vagina, and uterus by injection. Dr Chapman recommends pouring cold water in a small stream upon the lower part of the abdomen — a practice which the experience of my tutor Dr Cramer, and others fully justifies.

Hematemesis, or vomiting of blood is generally a vicarious discharge, and seldom fatal; but from whatever cause it may proceed, cold is in most instances useful to suppress it: it is applied to the parts over the stomach. Dr Darwin used the cold bath with success. In all these species of hemorrhagy cold drink is advised. In Hematemesis

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only a small quantity should be drunk. It will soon acquire the temperature of the body, and, instead of constringing the mouths of the vessels, will relax them. It will also distend by its quantity, and keep patulous the bleeding orifice. When bleeding from wounds does not cease spontaneously, the ligature is used. The Indians stop the bleeding from wounds by immersing the part in cold water

In Smallpox, before the time of the illustrious Sydenham heat externally, and cordials internally were prescribed. This great man protested against the practice, and set on foot an innovation, for which posterity have bestowed on him their gratitude, and veneration. He prohibited cordials, and admitted cool air to his patients during the eruptive fever. When the eruption appeared, he put his patients to bed, and kept them only warm to promote the maturation of the pustules. Dr Currie justly supposes the cold affusion to be improper after the eruption

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He used it in the eruptive fever, and thus describes its effects" The patient had a rapid and feeble pulse; a fœtid breath and pain in the head, back, and loins; heat 107 and pulse 119. I encouraged him to drink largely of cold water, and lemonade, and threw three gallons of cold brine over him. He was in a high degree refreshed by it. The eruptive fever abated in every respect, an incipient delirium subsided, the pulse became slower, the heat was reduced, and tranquil sleep followed. In the course of four and twenty hours the affusion was repeated three or four different times at his own desire; a general direction having been given to call for it as soon as the symptoms of fever returned. The eruption though more numerous than is usual from inoculation was of a favourable kind. There was little or no secondary fever, and he recovered rapidly."

In Measles the heat should not be excessive; the cool air, and treatment of Dr Syd.

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-enham should be enjoined. Such a degree of cold as would repel the eruption should be guarded against, lest a pulmonary disease should be the consequence

In Scarlatina Anginosa Dr Currie highly extols the affusion of water. In the early stage of the disease, when the skin was heated to 108 degrees, he used the cold affusion; at a more advanced period the cool; and sometimes the tepid affusion. He has the testimony of many practitioners, and particularly of Dr Gregory in its favour. When used in the first stage of the disease it seldom failed to stop its progress. The symptoms of this disease are so unlike in different persons, and at different times, that it is doubtful whether the use of cold water would always be advantageous. This remedy has gone into disuse; it will always be an unwellome one, and we have others equal in power.

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In convulsive diseases the cold bath has often been successful. Currie says it will immediately suspend the paroxysm of hysteria. In Chorea Sancti Viti he found it to be of no use. In tetanus it is often used with success in West Indies It was used with advantage by Dr Currie at Liverpool. He says the water should be used in the height of the paroxysm. Mr Hunter thought of flying to Nova Zembla if he should be seized with tetanus. In the convulsive affections of children Dr Currie thinks the cold bath very useful. The experience of a majority of physicians is in favour of warm bathing. cool air has often quieted the convulsions of children. In tetanus, and other spasmodic diseases the body does not feel sensibly the impression from cold water. The whole nervous power seems to be called into requisition for muscular action; or, in the language of Darwin the sensorial powers of volition and association, enfeeble the sensorial power of sensation..

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In diseases of the alimentary canal cold is sometimes useful. I have already said it is the cause of many of them; indeed warm extremeties are the very safeguards of health against a majority of diseases.

The benefits of country air in cholera infantum are unrivalled. Dr Rush used the cold bath in this disease with much advantage. Dr Cleghorn in his work on the diseases of Minorca relates "that the Spanish physicians had often assured him that they found nothing more beneficial in violent deplorable cholera than drinking of cold water which practice is recommended by many of the ancients" The cold bath, and cold drink are directly contrary to the present treatment of this disease In colic clysters of cold water have been used, and the dashing of it on the lower extremeties is said to have procured stools, when all other remedies had been used in vain.

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spasmodic stricture has often been ~~[illegible]~~ relieved by cold to the hypogastric region, and lower extremities

Strangulated hernia has sometimes been reduced by bladders of ice, or cold water applied for a length of time on the hernial sac. Cold here is not an antispasmodic. Mr Cooper has without a shadow of probability supposed that the stricture is sometimes caused by a spasm of the part encircling the neck of the sac. It is hard to suppose that what cannot be made to contract by chemical, and mechanical irritants should be excited to contraction by the congenial hernial sac. Cold contracts the parts, to which it is applied: it is the cause of cutis anserina, and shrinking of the extremities. A physician once had his foot so reduced in volume by this cause that his shoe fell from it. Does not it prevent that congestion of stagnant blood, which is the proximate cause of mortification. It

lessens the calibre of the blood-vessels, and causes the skin covering the tumour to contract, and more closely embrace the tumour. It thus limits the increase of the tumour, whilst by its weight it hastens its return into the cavity of the abdomen.

My preceptor Dr Cramer informed me that he had seen the obstinate vomiting of pregnant women checked by dissolving ice in the mouth, and swallowing it, after all other means had proved nugatory.

I will now lay aside my pen. What I have ~~written~~ ~~[illegible]~~. I know, ~~[illegible]~~ is not exempt from error in many points of view. Many interesting discussions in physiology have not been ~~touched~~. touched, and I have been brief and negligent in my therapeutical observations. But I have already exceeded the proper limits of

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an inaugural dissertation, and have not time to prosecute my undertaking. I hope it will answer the purpose, for which it is designed — it will at least be a vehicle of my gratitude to those who have discharged their duties with fidelity, and honor.

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No. 12.

William Sappington

Psoriasis, dry or scaly tetter

Dr: of Wm B. Sappington.
1812 No. 60.

1812

Inaugural Dissertation

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Pernicious Anæmia or Bright's Disease

Submitted to the University of Pennsylvania

by Charles and Harold Wright Miller

Undergraduates

for the degree of Doctor of Medicine

May Wilkins Washington - Class

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